FIRST IN CHANGE

UNIST

ULSAN NATIONAL INSTITUTE OF
SCIENCE AND TECHNOLOGY

2009

CONTENTS

UNIST is Travelling on a Road Untaken
On a Road to Changing the World for the Better

FIRST IN CHANGE, UNIST

FIRST IN CHANGE, UNIST

VISION GOALS STRATEGIES

UNIST, Where 'Innovation' Thrives to Change the World

VISION

World leading university to advance science and technology for the prosperity of humankind.

GOALS

To be ranked within the top 10 science and technology universities by 2030.

EDUCATION

Cultivation of creative science and technology leaders

RESEARCH

Realization of convergence science and technology indicating the new paradigm.

STRATEGIES

CREATIVITY

- Debate-oriented, convergent and creative classes based on e-Education
  - Mobile campus connected with Wi / Fi - smart phone - LMS
- Convergence of humanity and philosophy through AHS & entrepreneurship
  - Arts, Humanities, and Social Sciences (AHS), all classes by full-time professors

INTERDISCIPLINARY STUDIES

- All students required to complete two or more tracks(majors)
- All professors appointed to two or more schools

GLOBALIZATION

- 100% English lectures
- International professors and students - up to 20%

THRUST AREAS

- Advanced Materials (Bio-materials, Energy Materials, Composite Materials, Carbon Materials)
- Next-Generation Energy

FIRST IN CHANGE, UNIST

PRESIDENT'S MESSAGE

UNIST is reborn as a national research institute for science and technology under a special law with government funding. UNIST, as the 4th national research institute, will play an active role as the 'Think Tank' of Ulsan and Korea.

In a short history, UNIST has grown to become a world-class university, with a rapidly growing reputation for its research and impact on a wide range of field. Leading scholars from all around the world have been invited to deliver outstanding scientific results and education. UNIST's research facilities, along with its world class laboratory and state-of-the-art research equipment became an envy of many scientists around the world.

In order to serve and provide the nation with cutting edge technology and innovation, to promote local industry with technology and knowledge, and to lead and foster outstanding individuals for the country in science and technology, UNIST will promote the following three tasks.

First, UNIST will promote 'EXCELLENCE' in science and technology by improving our quality of research.
To achieve our intermediate goal of 'The World's Top 10 Science and Technology Universities by 2030', we will continuously work hard to create at least 10 UNIST brands.
Second, UNIST will establish successful role models for startups and academy-industry partnership.
UNIST will establish a support system to not only help young startups to compete within the country, but also help them succeed as they enter new global markets. Moreover, we will also contribute to create growth engines for the country and the city of Ulsan by establishing a one-stop startup assistant program to help professors and students to challenge themselves.
Third, UNIST will play an active role as the 'Think Tank' of Ulsan and Korea.
Today, we are living in the era where one person's outstanding idea or creativity can move the whole world. UNIST will be the 'Think Tank' of Ulsan, Korea, and the world for providing future vision, new knowledge, and innovative technology for industries by providing well-educated outstanding individuals.

UNIST's research facilities, along with its world class laboratory and state-of-the-art research equipment became the envy of many scientists and researchers around the world. However, UNIST should not be just one of institutes, but should be a real force, making a difference in the world and exerting a leadership role of 'First Mover'. To be one of the world's best research universities, there has to be a matching research environment. By combining cultural and moral infrastructure, we will create a foundation, where the world will be envious of exceptional research institute, UNIST.

UNIST will continuously strive to make an impact with its leading-edge research, promoting international collaboration as a driving force for excellence.

Thank you

Moo Young Jung

UNIST is wide open for gifted individuals with the dreams to participate in the vision of UNIST.

TRANSITION TO NEW BEGINNINGS

UNIST, Reborn as One of Korea's S&T Research Institutes

Established in 2009, UNIST has gained recognition and established a foothold as a unique educational and research organization.

In 2015, UNIST will reborn as one of Korea's Science and Technology research institutes under a special law with government funding.

UNIST is keen on promoting international collaboration as a driving force for excellence and aims to promote scientific collaboration with other countries through the exchange of researchers.

The law for the status change of UNIST will be an invaluable asset in reaching our goal, 'to become a world top 10 university by 2030,' thereby promoting international collaboration as a driving force for excellence.


KAIST
DGIST
GIST
World Leading University
FIRST IN
CHANGE
102

AMAZING UNIST

WORLD CLASS FACULTY

“Competitiveness of professors speaks to the competitiveness of a university”

Footsteps of global scientists are headed towards UNIST.
We are opening up the future of new science for mankind.

Kyungjae Myung

- Director of ‘Center for Genomic Integrity’ (one of the IBS campus site labs at UNIST)
- Leader of anti-cancer medicine development
- Lifetime researcher of NIH, US
- Director of the year 2014 from KSEA

Steve Granick

- Director of 'Center for Soft and Living Matter' (one of the 3 IBS campus site labs at UNIST)
- Distinguished professor of Natural Science
- Received ACS (American Chemical Society) Award in Colloid in 2013
- Received Polymer Physics Prize from American Physical Society in 2009

Jae Sung Lee

- World leading Scientist in Photo-Catalytic Water Splitting area
- Research on photo-catalytics hydrogen, fuel cell and Eco-friendly catalyst
- Published over 340 SCI papers and registered over 100 patents
- Received 2007 Thomson Scientific Citation Laureate Award

Rodney S. Ruoff

- Director of 'Center for Multidimensional Carbon Materials' (one of the 3 IBS campus site labs at UNIST)
- Distinguished professor of Natural Science
- No. 16 among world's material scientists selected by 'Thomson Reuters' in 2007
- Research papers cited over 42,000 times

Kwang Soo Kim

- The only national scientist in chemistry field (2010)
- Published about 400 SCI papers in 'Nature' and 'Science'
- Pioneered a new stage of molecular spintronics
- The first Korean member of International Academy of Quantum Molecular Science(IAQMS)

Christopher W. Bielawski

- World leading scientist in synthetic polymer chemistry
- Distinguished professor of natural sciences
- Received Journal of Polymer Science Innovation Award (2012)
- Received Presidential Early Career Award for Scientists and Engineers in the United States (PECASE 2009)

Jaephil Cho

- Director of Converging Research Center/ Director of Green Energy Materials
- Initiator of Lithium Reactive Coating Technology for Cathode Materials
- Knowledge Creation Award in Material Science (Ministry of Science, ICT & FP, 2013)
- Inchon Award (Natural Science, Inchon Memorial Foundation, 2013)

Pann-Ghill Suh

- Top expert researcher on metabolic disease and cancer generation mechanisms
- Director of 'Center for Cell to Cell Communication in Cancer'
- Received Asan Medical Award (2014)
- Appointed as a national scholar by Korean government (2007)

Mi Hee Lim

- Representative female scientist in the field of inorganic chemical metal neuroscience
- Received NSF Career Award of the United States (2013)
- Selected as Alfred P. Sloan Fellow in the United States (2012)
- Received Paul Saltman Award of the United States (2012)

Yoon-Kyoung Cho

- Expert in nano biosensor and lab-on-a-chip
- Developed ultra-small blood tester using lab-on-a-disk
- Editor of 'Lab on a Chip' published by Royal Society of Chemistry, UK
- Korean Woman Engineer of the Year, Young Engineering Award

We have turned ‘uncertainty’ into ‘certainty’ in the past 5 year
The rapid growth of UNIST is surprising the world.

AMAZING UNIST

UNRIVALED OUTCOMES

s.

Hosted three IBS campus research centers
(Research funding of 300 million USD for 10 years)

Research Center 1
'Center for Soft Living and Matter'
Director: Steve Granick from University of Illinois, US

Research Center 2
Center for 'Multidimensional Carbon Materials'
Director: Rodney S. Ruoff from University of Texas, US

Research Center 3
Center for 'Genomic Integrity'
Director: Kyungjae Myung from NIH(National Institutes of Health, US)

One of the world top 3 univ. in secondary batteries (along with MIT and Stanford)

Developed cathode and anode materials for secondary cell: 6.4 million USD, highest price of technology transfer among domestic universities, to show annual import substitution effect of 150 billion won

Developed 1-minute battery charging and discharging technology for electric vehicles: ranked as no. 4 among top 10 science and technology news of Korea in 2012

Large-scale R&D project groups

- Green energy material technology development center: 20 million USD for 5 years
- New growth engine project group: 19 million USD won for 5 years
- ITRC: 5 million USD for 4 years / SRC: 7 million USD for 7 years / BK21+: 18.7 million USD for 7 years

Major performance indicators

- 2014 NPI (Nature Publishing Index): **No. 4** among domestic universities (as of June 2014)
- 2014 GPF (Global Ph.D Fellowship): **No. 1** in graduate school quota among domestic universities (20 fellows selected)

OUTSTANDING STUDENTS

Future scientists with unrivaled talents to create world 'firsts'

AWARDS

2014 **Selected as an advance party for 'Global Challenge Project' to 'visit UK, the origin of rowing'**
Rowing Team 'Derowing'

'SPARK Design Award' - Gold Prize for Concept
Juntae Kim and Sangjin Choo (School of Design and Human Engineering)

Grand Prize at "Academy Water Prize"
Team 'Su Su(水手)'

Team 'Derowing'

2013 **Grand Prize at 'Korean Social Venture Competition'**
Team 'W (Double You)'

A' Design Award & Competition
Team 'S-cube' from School of Design and Human Engineering

Selected as the Asia cooperative pilot projects at the 2013 Asia Youth Tech Entrepreneurship Camp (AYTEC).
Team 'Sullivan's Voice'

Best proposal at 'the 2013 U(University)-startup contest'
Team 'PROJECT M'

2012 **2nd place in 2013 World Finals of Odyssey of the Mind**
Team 'LAON'

The Best Article Award in the 13th Asia Pacific Industrial Engineering and Management Systems Conference
Minsu Cho (School of Business Administration), Su Jin Pyo (School of Energy and Chemical Engineering)

Team 'Sullivan's Voice'

PUBLICATION IN INTERNATIONAL JOURNALS

Moon-Gon Jeong School of Natural Science

Selected as cover paper of Chemical Communications

"Self-Assembly of Dendritic-Linear Block Copolymers with Fixed Molecular Weight and Block Ratio"

Bonjae Koo School of Energy and Chemical Engineering

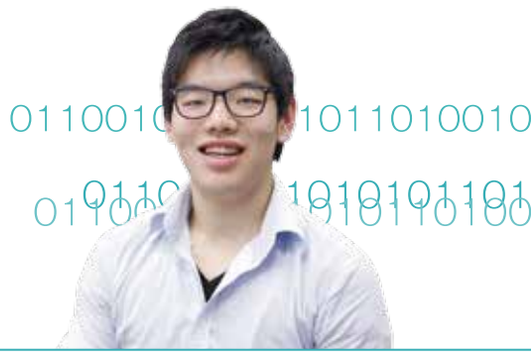
Angewandte Chemie International Edition

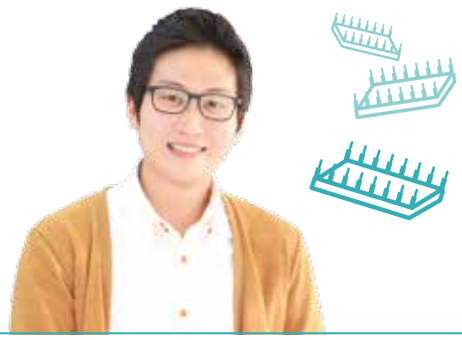
"A highly cross-linked polymeric binder for high-performance Si negative electrode in Li-ion batteries"

Bo-jeong Seo School of Electrical and Computer Engineering

Journal of Applied Physics

"Observation of trapped-modes excited in double-layered symmetric electric ring resonators"





Seyeon Yoo School of Electrical and Computer Engineering

MWCL(Microwave and Wireless Components Letters)

"Development of a core part that greatly increases accuracy and stability of doppler radar technology"

Minju Park School of Energy and Chemical Engineering

Nanoscale

"Development of metal-free electrochemical catalyst for fuel cell"

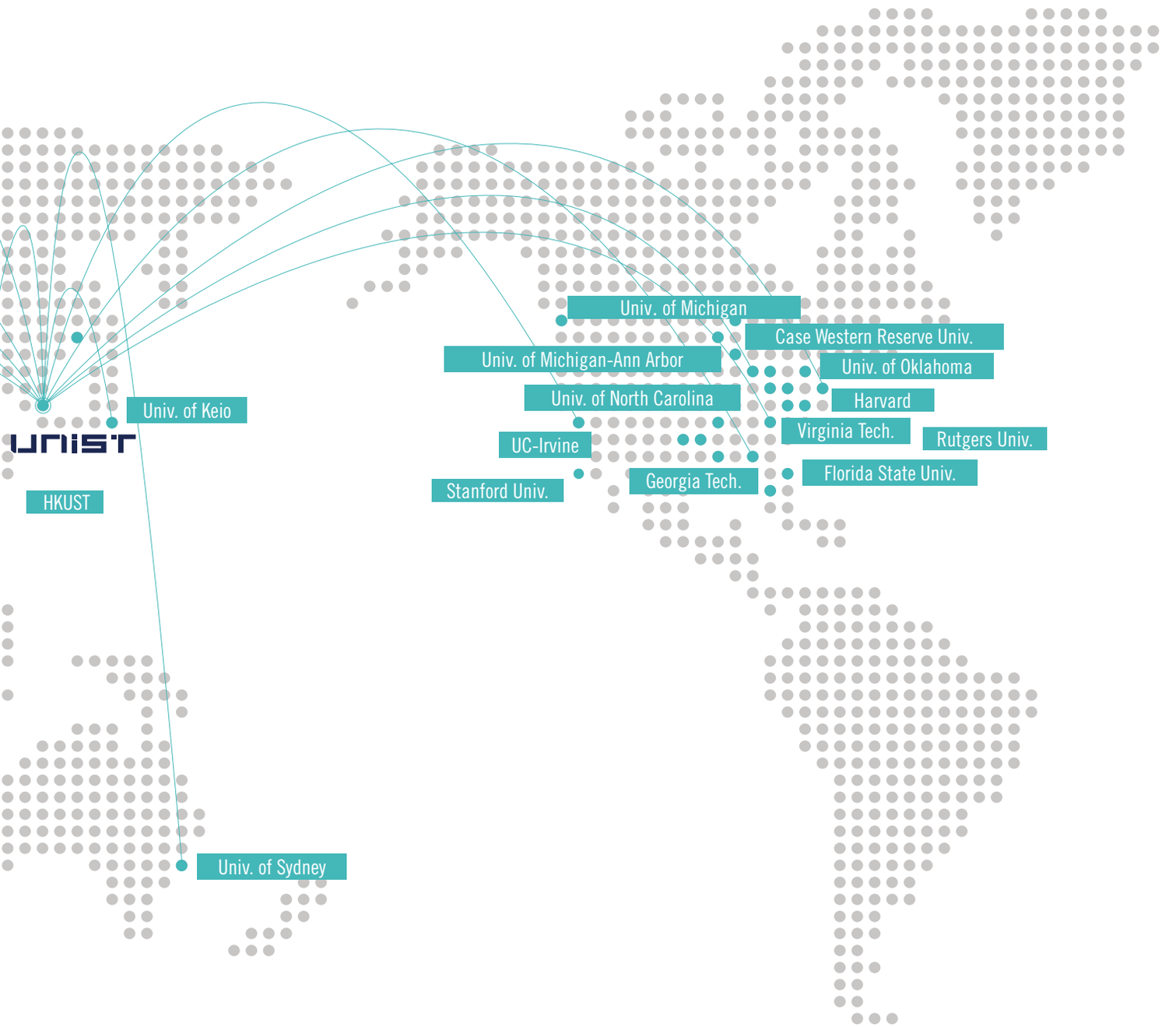
UNIST IN THE WORLD

Network with World Leading Outstanding International Universities

UNIST is enhancing its competitiveness through cooperation with scholars from international universities and institutions as well as through international student exchange programs.

UNIST, the Only Truly International University in Korea

- 100% English only classes
- Over 2/3 of professors with international Ph.Ds (Harvard, MIT, Stanford, Oxford, etc.)
- 100% of professors with international research experience



SPECIAL UNIST

CREATIVITY!
NEW PARADIGM SHIFT

UNIST is cultivating creativity in student learning through introduction of IT-based LMS.

• 100% of AHS lectures taught by full-time professors

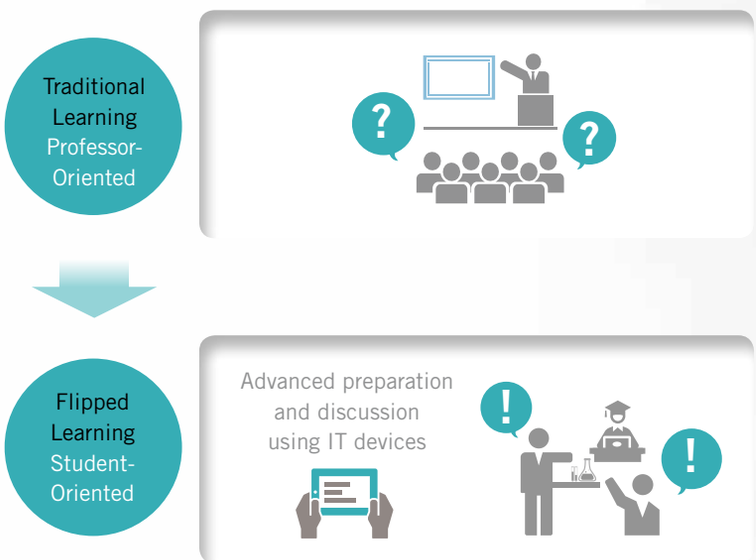
Interdisciplinary creativity education on Arts, Humanities and Social Sciences

• Flipped Learning Model(FLM)

The first university in Korea to apply the FLM

A leading university in creative education methods

2014 Selected as an exemplary case of E-education by Korean Council for University Information
2013 Attracted a fund of 100,000 USD from Korea Foundation for the Advancement of Science and Creativity
2012 Selected as an exemplary case of smart campus by the Ministry of Education, Science and Technology



SPECIAL UNIST

INTERDISCIPLINARY!
BREAKING BOUNDARIES

UNIST creates differentiated research outcomes based on interdisciplinary research and education.

- All students are enrolled as non-majors and finish with two or more majors.
- All professors belong to two or more schools.

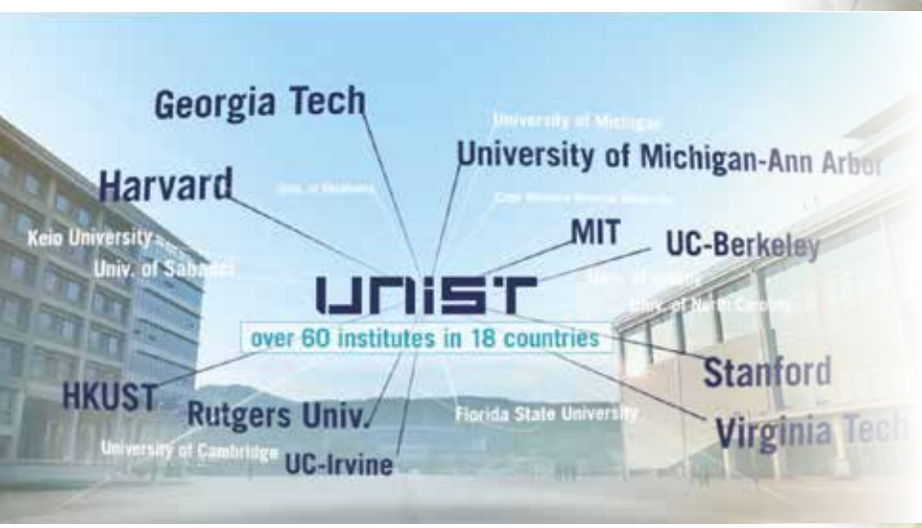
SPECIAL UNIST

GLOBAL!
HUB OF THE WORLD

**UNIST is the only university in Korea where 100% of lectures are conducted in English.
We set the standard by bringing a new sensation to the world of education.**

Increase international professors and students to more than

20%



Exchange with

60 prestigious universities and research institutes in

18 nations

150 international students

from **28** nations.

Top **1%** of students
from their respective countries

SPECIAL UNIST

RESEARCH!
THE POWER TO CHANGE

UNIST now stands at the center of global research with cutting edge experimental equipment. We create the best research outcomes based on an optimal research environment.

UCRF

UNIST CENTRAL RESEARCH FACILITIES

Consists of 7 main research laboratories

- Material Analysis Lab
- Nano Fabrication Center
- Environmental Analysis Center
- Design and Manufacturing Center
- In Vivo Research Center
- UNIST-Olympus Bio-med Imaging Center
- Radioisotope Safety Lab

Representative research equipments

- Advanced TEM
- E-Beam Lithography
- GC HRMS Spectrometer
- Nano Machine
- 7T MRI
- Super Resolution Microscope

Over 200 pieces of research equipment worth 140 million USD

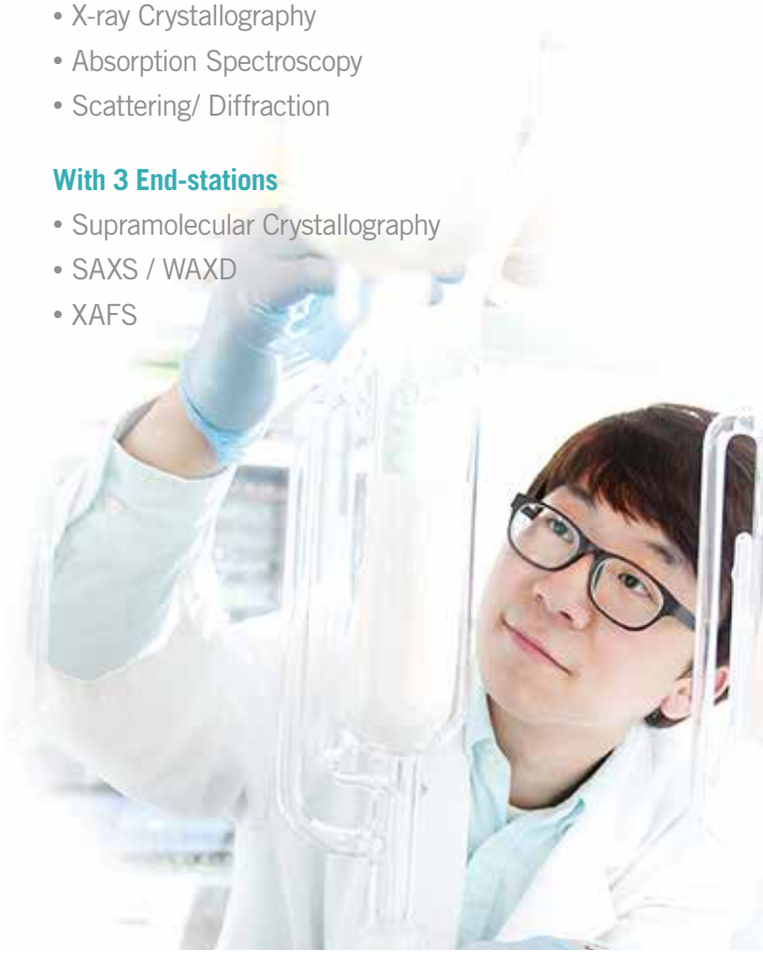
Beamline

Beamline in PAL(Pohang Accelerator Laboratory) For the experiments of

- X-ray Crystallography
- Absorption Spectroscopy
- Scattering/ Diffraction

With 3 End-stations

- Supramolecular Crystallography
- SAXS / WAXD
- XAFS



EXPANDING RESEARCH INFRASTRUCTURE BY INVESTING OVER 200 MILLION USD

FROM **CHALLENGES** TO **CHANGES**
FROM **CHANGES** TO **CHANCES**

6 years after opening, UNIST has grown rapidly and entered the global spotlight.

Wholehearted support by the government and local entities amounting to one billion USD, along with the passion and belief of UNIST.

In 2015, UNIST begins yet another change.
Advanced research facilities will be further expanded through investment of 200 million USD until 2016.
By 2030, UNIST will stand as one of the top 10 research-oriented universities in the world.

BRILLIANT FUTURE, UNIST

U-VALLEY

"SURPASSING THE SILICON VALLEY"

UNIST is located in Ulsan, the industrial capital of Korea.
This is the core base of U-VALLEY that receives attention from the industrial world.
Based on outstanding research outcomes and technology transfers, we will create new industrial growth engines to lead the world.


Industries
National
Research
Institutes
UNIST
ULSAN NATIONAL INSTITUTE OF
SCIENCE AND TECHNOLOGY

UNIST AT A GLANCE

CAMPUS AREA (m^2)

1,023,991

2015

NUMBER OF UNDERGRADUATES

4,146

2015

NUMBER OF GRADUATES

952

2015

AVERAGE SCHOLARSHIP PER STUDENT (USD)

5,407

2013

DORMITORY ACCOMMODATION RATE %

109

2014

EMPLOYMENT RATE %

65.5

2014

GRADUATE SCHOOL ENTRANCE RATE %

82.7

2014

No. 1 among domestic universities

NUMBER OF FULL-TIME FACULTY MEMBERS

247

2015

AVERAGE AGE OF FULL-TIME FACULTY MEMBERS

Age

42.8

2015

AVERAGE RESEARCH GRANT PER PROFESSOR

(USD)

263,960

2014

RATIO OF INTERNATIONAL FACULTY

%

14

2015

INVESTMENT IN RESEARCH EQUIPMENT (CUMULATIVE)

(USD)

140,600,000

2013

ATTRACTION (CUMULATIVE) OF EXTERNAL RESEARCH GRANT

(USD)

132,180,000

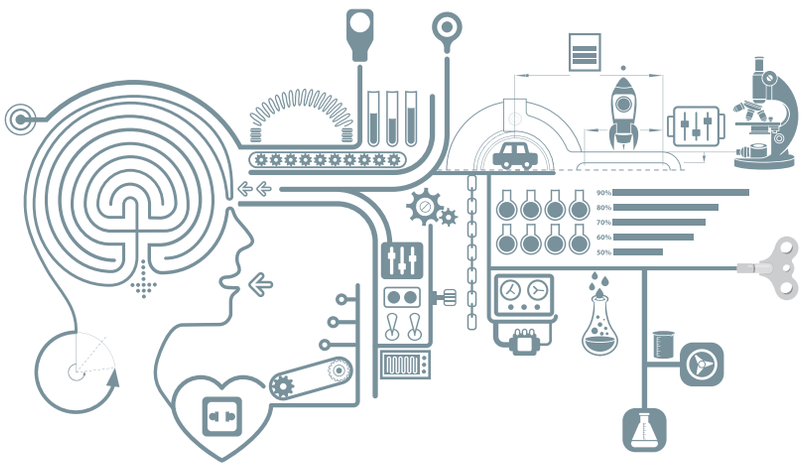
2014

NPI INDEX(RANKING)

*NPI: index of research papers published in Nature and 17 sister magazines: no. 4

INTERDISCIPLINARY EDUCATION

All Students are obligated to complete more than two tracks(major) to build their own creativity.



DIVISION OF GENERAL STUDIES

The Division of General Studies (DGS) is responsible for students' general cultural education during their freshmen year. DGS offers courses in Mathematics and basic sciences (Physics, Chemistry, Biology) as well as basic IT and management courses that provide a solid foundation for students when they study major fields of their choice. In order to cultivate a wide intellectual horizon, an innovative creativity, and a harmonious personality for each student we offer essential courses in humanities, social sciences, English, and arts.

SCHOOL OF NATURAL SCIENCE

The School of Natural Science offers three tracks, namely, Mathematical Sciences, Physics and Chemistry. The School believes that the mutual synergy between science and technology will form the basis for an economically and politically sustainable society, and strives to contribute to our society in such a manner through academic excellence. The School pursues to train global leaders that will play a pivotal role in our society through advances achieved in natural sciences and their applications.

*Track: Mathematical Sciences, Physics, Chemistry

SCHOOL OF LIFE SCIENCES

The School of Life Sciences aims to improve human health by interdisciplinary research and education in biomedical sciences and engineering through the convergence of fundamental biology, nanotechnology and various engineering principles. In order to meet the increased needs in healthcare and advanced medical theragnostics, The School of Life Sciences pursues to train creative global leaders through interdisciplinary research and education programs.

*Track : Biological Sciences, Biomedical Engineering

SCHOOL OF DESIGN AND HUMAN ENGINEERING

The School of Design and Human Engineering offers innovative education and creative research experiences in the area of 'Industrial Design (ID)' and 'Human and Systems Engineering (HSE)' to realize our vision: Improve the quality of human life through engineering design.

*Track: Industrial Design, Human and Systems Engineering

SCHOOLS

9 schools and 21 tracks

SCHOOL OF ELECTRICAL AND COMPUTER ENGINEERING

The School of Electrical and Computer Engineering at UNIST is dedicated to educating students in interdisciplinary scholarship that will serve for our future society. Our teaching and research take places in interdisciplinary programs and institutes where traditional departmental boundaries are things of the past. Our mission is to provide enabling technologies for the future way of life through the convergence of electrical and computer engineering with new nano, bio, and environmental technologies.

*Track: Electrical Engineering, Computer Science and Engineering

SCHOOL OF ENERGY AND CHEMICAL ENGINEERING

The School of Energy and Chemical Engineering was designed for an emerging field combining chemical engineering principles with research about energy conversion and storage. The field of Energy and Chemical Engineering encompasses a wide range of interests including green chemical processes, chemical engineering, advanced materials, and energy conversion and storage. Students can achieve in-depth knowledge and hands-on experience on catalysts, nanomaterials and devices, polymers, fine chemicals, applied molecular chemistry, and other chemical and energy engineering-related subjects.

*Track: Energy Engineering (Battery Science and Technology), Chemical Engineering

SCHOOL OF MECHANICAL AND NUCLEAR ENGINEERING

The School of Mechanical and Nuclear Engineering (MNE) consists of two tracks such as Mechanical Engineering (MEN) and Nuclear Science and Engineering (NSE). The MNE focuses on world-class research and education in order to nurture creative experts and scholars who can contribute to the development and advancement of cutting-edge industries. Although the MNE provides two disciplines with students it together emphasizes the creativity and ingenuity of the education.

*Track: Mechanical Engineering, Nuclear Science and Engineering

SCHOOL OF MATERIALS SCIENCE AND ENGINEERING

The School of Materials Science and Engineering is an interdisciplinary field which emphasizes the study of processing-structure-property relations in materials. In order to develop new materials and find their applications, it is important to understand the fundamental relationship between the structure, processing and properties. The School of Materials Science and Engineering covers conventional materials to most advanced materials including nano materials and beyond.

*Track: Advanced Materials Science, Nano Material Engineering

SCHOOL OF URBAN AND ENVIRONMENTAL ENGINEERING

Envisioning a safe and sustainable society against various natural and man-made hazards, the School of Urban and Environmental Engineering(UEE) provides unique, interdisciplinary educational programs rooted from Environmental Science and Engineering, Urban Infrastructure Engineering, and Disaster Management Engineering. Our educational programs are driven strongly by top-notch research areas of the school focusing on advanced environmental analysis and pollution control for water and air, earth and climate studies for monitoring, prediction, and mitigation of global climate change, safe and resilient construction and material engineering technologies for building and infrastructure, disaster-resilient urban planning, and the policy and technologies for the natural and man-made disaster management and mitigation.

*Track: Environmental Science and Engineering, Urban Infrastructure Engineering, Disaster Management Engineering

SCHOOL OF BUSINESS ADMINISTRATION

The School of Business Administration educates students both in technology and management to be creative global business leaders in today's dynamic economy.
The School offers various academic tracks in General Management / Information Systems / Entrepreneurship, Finance / Accounting, Marketing / International Business.

*Track: Management, Finance & Accounting, Entrepreneurship

HISTORY

2009

MAR
· Held the 1st entrance ceremony (first principal, Moo Je Cho)

APR
· Two schools were selected for World Class University (WCU) nurturing project

JUN
· Selected as a university to host the New Technology Convergence Growth Engine Project (new material / nano convergence)

2010

JUN
· Opened Super Computing Center

AUG
· Opened Hans Scheler Stem Cell Research Center

2011

JUN
· Appointed for ITRC (IT Research Center) supported by the Ministry of Knowledge Economy

JUL
· Selected as one of four research-oriented universities for special support by the Ministry of Education, Science and Technology

OCT
· Declared UNIST VISION2030 ('World Top 10 University by 2030')

DEC
· Selected as a partner group of Max Planck Institute, Germany

SEP
· Constructed KIST-UNIST Convergence New Material Research Center

OCT
· Opened Stem Cell Research Center

NOV
· Selected as an exemplary case of technology transfer business

2012

FEB
· Held the 1st graduation ceremony

APR
· Government authority changed to the Ministry of Science, ICT and Future Planning (UNIST, KAIST, GIST, DGIST)

MAY
· Technology transfer for secondary cell material (6.4 billion won, highest among Korean universities)

SEP
· Completed construction of Advanced Material Research Center

NOV
· Launched IBS (Institute for Basic Science) Campus Research Center 'Multidimensional Carbon Materials'

2013

JAN
· Launched IBS (Institute for Basic Science) Campus Research Center 'Soft and Living Matter'

MAY
· Completed construction of Low-dimensional Carbon Innovation Material Research Center

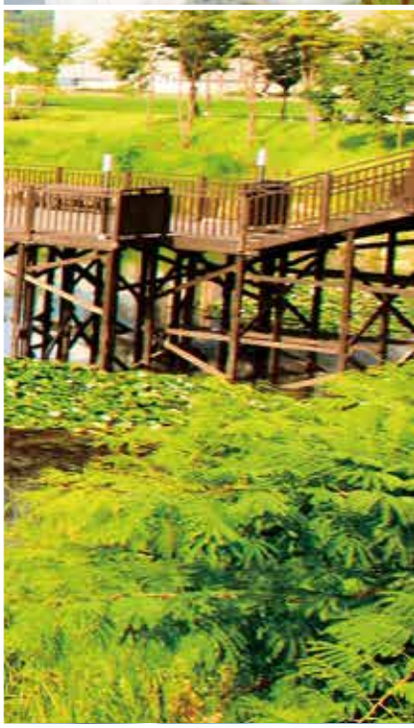
JUN
· Groundbreaking ceremony for step 2 BTL

AUG
· Additional establishment of IBS (Institute for Basic Science) Campus Research Center

2014

ECO CAMPUS

Gamakmot, a lake where Kestrels build their nests, changes clothes with beautiful nature throughout the year.
The walkway offers a refreshing feeling.
ECO Campus is another pride of UNIST.



FUNDING

**UNIST starts the first step
towards a new paradigm for science and technology.**

**Please give us strong soil on which
the seeds of growth can put down their roots.**

Just like a spore of a dandelion that puts down its roots no matter how barren the land may be, UNIST will sprout buds for the betterment of mankind.

FIRST IN CHANGE, UNIST

INQUIRY ON DEVELOPMENT FUND:
Public Relations Team
T.052-217-1227 unist-gift@unist.ac.kr

Publication Registration No.
UNIST-PR-2015- -

50 UNIST-gil, Ulju-gun, Ulsan, 689-798, Korea
T. 052.217.0114 www.unist.ac.kr